

**Version**

**1**

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PUBLIC HEALTH PREPAREDNESS (PHP)  
TRAINING PROGRAM

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Training Course Materials



The Foundations of Public Health Series:  
*The PPE Training Course*

PUBLIC HEALTH PREPAREDNESS TRAINING COURSE MATERIALS

# **Handbook for the *Personal Protective Equipment (PPE)* Training Course**

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Nevada Division of Public and Behavioral Health (DPBH)  
Public Health Preparedness (PHP) Program  
4150 Technology Way • Suite 200  
Carson City, Nevada 89706  
Phone 775.443.7919 • Fax 775.684.5951  
Prepared by: Dan Mackie, MPH, MA

# Administrative Handling Instructions

1. The title of this document is:
  - a. Handbook for the Personal Protective Equipment (PPE) Training Course
2. The information gathered in this handbook is classified as “For Official Use Only”, (FOUO), and should be handled as sensitive information not to be disclosed. This document should be safeguarded, handled, transmitted, and stored in accordance with appropriate security directives. Reproduction of this document, in whole or in part, without prior approval from the Nevada Division of Public and Behavioral Health is prohibited.
3. At a minimum, the attached materials will be disseminated only on a need-to-know basis and when unattended, will be stored in a locked container or area offering sufficient protection against theft, compromise, inadvertent access, and unauthorized disclosure.
4. Points of Contact:
  - a. Course Instructor:

Name:	Dr. Tracey Green, MD
Title:	Chief Medical Officer
Agency:	Nevada Division of Public and Behavioral Health
Street Address:	4150 Technology Way, Suite 300
City, State ZIP	Carson City, Nevada 89706
Cell Phone #:	775-684-4200
e-mail:	tgreen@health.nv.gov

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## Welcome to the Online ‘Personal Protective Equipment’ Training Course

*This online accessible training course is intended to be done at the trainee’s own pace. The intent of this course is to create a common foundation of knowledge to build off of during future trainings, exercises and real-world activations of the public health system.*

In this ongoing grant climate of ‘do more with less’, we here at the Nevada Division of Public and Behavioral Health’s (DPBH), Public Health Preparedness (PHP) training and exercise program, are working on ways to continue bringing you training opportunities, but with little to no travel expenses associated with those trainings.

One of the strategies we have come up with is to provide training opportunities through an online format using a internet-accessible system called **Prezi**. For those of you who have never heard of Prezi, it is basically a more dynamic version of the old standby: *Microsoft (MS) Power Point*. Rather than transitioning from slide-to-slide like we have in the past on MS Power Point; with Prezi you ‘fly’ through the transitions seamlessly. You’ll see what I mean in a few moments.

Today’s online training course should take about **20 minutes** to complete.

## System Requirements to Run Today’s Training Course

**Basic Computers Will Work Fine:** The technical support team at Prezi has posted the following on their Prezi Basics web page:

*The Prezi editor runs well on most contemporary computers, even netbooks. You can easily determine if your computer meets system requirements to watch prezis by:*

1. *Checking out any prezis from [www.Prezi.com/explore](http://www.Prezi.com/explore) to see if it plays back smoothly on your computer.*

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2. *Checking if you can play back YouTube videos while in full screen mode when in any prezi.*

*High End Usage: If you would like to play a very large prezi (with many videos, animations, high resolution images, etc.), Prezi uses Adobe Flash technology to render prezis in real time, therefore you can create very high resolution presentations, but your playback performance will rely on the hardware. Here are some hardware recommendations:*

1. *Fast processors and lots of memory will help more than a strong graphics card.*
2. *It can help to play a prezi through once, it will play more smoothly the second time (do not restart the prezi).*

*Website: The [www.Prezi.com](http://www.Prezi.com) website supports all major modern browsers (Internet Explorer 9 and above, Mozilla Firefox 3 and above, Google Chrome, Safari) but for the best experience we recommend using the most standard compliant browsers available (Firefox 3.6+, Chrome 4+, Safari 4+). Flash version 11.1 is required.*

*Prezi for Windows /Mac: For users who would like to access Prezi through Microsoft Windows:*

- *2.33GHz or faster x86-compatible processor, or Intel Atom™ 1.6GHz or faster processor for netbook class devices*
- *Microsoft® Windows® XP, Windows Server 2003, Windows Server 2008, Windows Vista® Home Premium, Business, Ultimate, or Enterprise (including 64 bit editions) with Service Pack 2, Windows 7, or Windows 8 Classic*
- *512MB of RAM (1GB recommended)*

*For users who would like to access Prezi through a Mac Operating System (OS):*

- *Intel® Core™ Duo 1.83GHz or faster processor*
- *Mac OS X v10.6, v10.7, or v10.8*
- *512 MB of RAM (1GB recommended)*

**High-Speed Internet Connection:** In order to access today's training course, you will need access to a computer with a high-speed internet connection. We realize that for many of you in our rural counties, such a connection may be an issue. So in an effort to ensure that you can at least read along with what the audio recordings for each transition, we have provided a complete transcript of what those audio recordings cover.

**Software Requirements:** In addition to this internet connection requirement, we ask that your computer also have *Windows Player* installed. This will allow your personal computer (PC) to run the audio portions of the Prezi presentation.

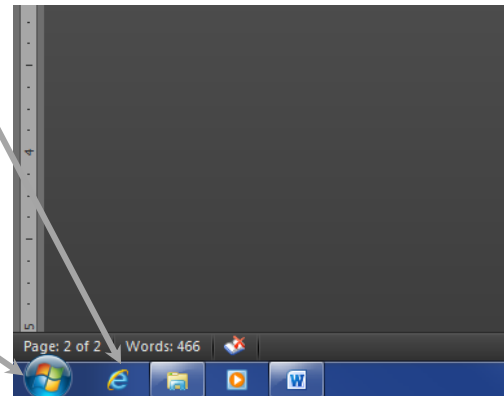
**Sound Speaker(s):** In order to listen to the presenter's recordings for each transition in today's course, please ensure that your PC has a speaker (or speakers) that are working, and as basic as this sounds: make sure the volume is turned on and up. If your system does not have a speaker, then you can follow along in this course handbook and read through each recording's content.

**How to Access, Open and Watch the Prezi Presentation:** Open the internet browser for your PC by double clicking on that browser's icon in the bottom-left corner of your screen like this:

If your computer is setup with a shortcut to your browser, like this, then click here:

If your computer does not have that shortcut, then click here:

When that opens, look for the Internet browser and double click on that.



Once your internet browser opens, you will need to copy/paste this web address into your browser. Please ensure that each letter/digit/symbol is copied into your browser; otherwise the presentation will not open for you.

By clicking on this **hyperlinked** web address below, it should automatically open the *Prezi* presentation for you. If not, then please copy and paste this web address into your PC's internet browser.

[http://prezi.com/3nw-9hemwnaa/?utm\\_campaign=share&utm\\_medium=copy&rc=ex0share](http://prezi.com/3nw-9hemwnaa/?utm_campaign=share&utm_medium=copy&rc=ex0share)

Depending on your computer and the strength of its internet connection, it may take up to a minute for the online presentation to fully load; so please be patient while the website loads the online course.

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Depending on your internet connection, this presentation may take a few seconds, to a few minutes, to load; so please be patient. Once the presentation does load, you can watch the course as it displays, on a portion of your PC's screen; or, you can expand it to fill your computer's entire screen by clicking on this symbol in the bottom-right corner of your screen:



Either way you choose to watch the Prezi presentation, in full screen mode or not, you will be advancing the presentation at your own pace, one transition at a time, by clicking the right-arrow at the bottom of the screen (circled above).

If you would rather watch and listen to this course like a movie, you can also click on this “Play” button in the bottom-left corner of the window, as indicated by this arrow.

Note: If you opt to watch the course in the full-screen mode, the software will pop-up a question about “*Allow full screen with keyboard controls?*” Just click on the **Allow** button.

From that point on, you will watch and listen at your own pace. If you need to go back and redo a previous slide (or as Prezi calls them: Path), then simply click that left-facing arrow at the bottom of your screen. Adjust your PC's volume and enjoy the course!



## Full-Transcript to the PPE Training Course

*The U.S. Centers for Disease Control and Prevention (CDC) have created 10 essential public health services that public health systems throughout the country should be capable of. The eighth essential service is: “Assure a competent public and personal health workforce.”*

—Taken from the CDC website <http://www.cdc.gov/nphpsp/essentialservices.html>

**I**n this next installment of the ‘*Foundations of Public Health Series*’, we will look at one type of intervention listed within the public health ‘Toolbox’ that public health could use to help break the Chain-of-Infection; something called Personal Protective Equipment or PPE for short.

If you are taking this course at your own pace from your computer, then please allocate at least **20** minutes to complete this presentation. Each of the courses within this series are designed to build upon the knowledge gained in previous courses, so please do not jump from course to course out-of-sequence.

As with each of the courses within this series, here is the transcript of what was recorded for this course.

Path #1: Welcome back. As with previous courses in this series, we ask that you please adjust your computer’s volume control so you can hear the audio component of this training course. You can advance the presentation at your own pace, by clicking that right-facing arrow at the bottom of your screen, or by clicking that ‘Play’ button in the bottom-left corner of the screen.

Path #2: Hello, and welcome back to the next course in the series. Today’s presentation is titled: “*The Foundations of Public Health Series: Personal Protective Equipment.*” My name is **Doctor Tracey Green** and I am the Chief Medical Officer for the State of Nevada. I will be presenting today’s material for this online-accessible training course. This series is intended for both public health

and its partner agencies, so that we may all be speaking the same language when it comes to large-scale responses to infectious disease.

Path #3: In this third course, we will focus in on one of the interventions that was discussed in the public health toolbox course, under ‘H’ for Hygiene: Personal Protective Equipment (PPE).

Path #4: As you may recall from the public health ‘Toolbox’ course, I described PPE as “physical barriers that prevent an agent from entering our body.” By achieving this, PPE helps to break that Chain-of-Infection by interrupting the middle link: Transmission.

Path #5: I also introduced the idea of PPE as part of those Threat Response Guides or TRGs. If you recall, for each biological threat that we have written for, there is a table that annotates which PPE and level of precaution is needed to protect us from a specific agent.

Path #6: Here’s that table I used, and if you look at that second column from the right (“Hygiene”), then you see the acronym PPE with a superscript annotation.

Path #7: Those correlate to these notes listed at the very bottom of the table, where you see “*Standard Precautions*”, “*Contact Precautions*”, “*Droplet Precautions*”, and so on.

Path #8: The intent of this course is to expand upon those notes used in the TRGs, and to explain what requirements are needed for each level of precaution. We will work our way from the most basic level, to the most stringent level, in order.

Path #9: Before I get into the types of PPE, I just wanted to draw your attention to this note about hand hygiene. The simple act of washing one’s hands, both before and after patient care, is a great way of reducing the threat posed by microbes.

Path #10: OK, we created this table as a way of organizing all of the precautions into one easy-to-follow tool. The levels of precaution are listed across the top of this table, and we’ve even added a new one, which we call “*Enhanced Full-Barrier Precautions*.” I’ll go into more detail on that, later in this course.

Path #11: And over here to the far left, we have listed the various types of PPE and precautions. I will give a brief description for each of them, one at a time, working our way from the top to the bottom of this table:

- **Gloves:** These are clean, non-sterile surgical gloves that are used when touching or coming into contact with blood, body fluids, secretions, or excretions. These are put on before such contact, and are removed and

discarded afterward. Hands are must be washed immediately after removal.

- **Gowns:** By this I am talking about one of those one-piece Tyvek suits that are fluid resistant and cover the entire body. These are worn to protect the skin and clothing during procedures or activities where contact with blood or body fluids is expected. These are particularly useful for procedures that would generate a lot of splashes of blood and body fluids. There are instances when this form of PPE would involve a hood as well.
- **Masks and Respirators:** These are worn when there is potential for contact with respiratory secretions from coughs, or sprays of blood or body fluids. This type of PPE will cover an entire range of options (e.g. surgical mask, N-95, PAPRS, etc.) that I will go into more detail as we progress through the table. Please note that when you hear a mask being described as “N-95”; that simply means that the mask is rated to block 95% of particulate matter.
- **Face and Eye Protection:** This includes goggles and those clear plastic wrap-around face-shields. These too are for procedures that could generate a lot of splashes or sprays of blood and body fluids, respiratory secretions, etc. Please note that personal eyeglasses are NOT considered adequate eye protection. This type of PPE is intended to protect the three most susceptible “*Portals of Entry*” that I discussed in the previous courses: the eyes, the nose and the mouth.
- **Safe Injection Practices:** This refers to the proper use and handling of supplies for administering injections and infusions (e.g. syringes, needles, finger stick devices, intravenous tubing, medication vials, and parenteral solutions). The idea here is to not have any accidental needle-sticks of the healthcare providers with those sharp objects.
- **Safe Handling of Contaminated Equipment and Surfaces:** Avoid contamination of clothing and the transfer of microorganisms to other patients, surfaces and environments. Clean, disinfect or reprocess non-disposable equipment before reuse with another patient. Make sure that single-use items are properly disposed of.
- **Respiratory Etiquette:** This is the covering of coughs and sneezes.
- **Shoe covers:** These are those single-use covers that slip over your shoes.
- **Head covers:** Although this is self explanatory, it could include the hood that is included as part of that one-piece Tyvek suit I spoke of earlier, or it can be a separate piece of PPE that is added to a hoodless Tyvek suit.

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- **Rubber Boots:** Unlike shoe covers that are intended for single use under light conditions, this type of PPE is for reuse after they are reprocessed (cleaned, sterilized and dried), and are useful for more demanding conditions.
- **Non-Porous Apron:** This piece of PPE is intended to reinforce the one-piece Tyvek suits that are fluid resistant and cover the entire body. These are worn to protect the skin and clothing during procedures or activities where contact with blood or body fluids is expected. These are particularly useful for procedures that would generate a lot of splashes of blood and body fluids.
- **Room:** For particularly contagious agents, precautions may expand beyond what the healthcare provider can wear on his or her own body. In certain circumstances, the level of precaution is expanded to include the space in which the patient is housed.

Path #12: For *Standard Precautions*, we see that gloves, a gown, a surgical mask, face and eye protection, safe injection practices, safe handling of contaminated equipment, and proper respiratory etiquette are required. As you will see this level of precaution will be expanded upon as we progress through the table.

Path #13: Next we have *Contact Precautions*, which includes all the precautions listed for Standard, but goes on to add that “Private Room” recommendation down there at the bottom of this column. As you may recall from the Chain-of-Infection course; contact transmission comes in two forms: direct and indirect.

Path #14: In the third column over, we see *Droplet Precautions*. Although it may appear that the PPE recommendations are the same, there are some subtle differences. Not only do healthcare workers need to wear the proper mask, but so too does the patient. The protective masks are required within 3 to 6 feet of the patient, which you may recall from the Chain-of-Infection course, is the distance that those small globules (remember: life rafts for small germs?) can be ejected from the body by coughs or sneezes.

Path #15: Next we have *Airborne Precautions*. These too appear to be the same, but you may notice that I’ve added that double check-mark for “Mask/Respirator.” Up to this point, the standard rectangular surgical masks (aka: procedure mask) will work just fine, but for airborne pathogens, a **fitted N-95 mask** or higher must be used. For those of you who would like to learn where you should go to be “fitted” for your N-95 mask, I would point you toward your Community Health Nurse (CHN), or your facility’s infection control director for guidance on where to go for your ‘fit-testing.’ If you look at the bottom of this column, you will see that for the “Room” precaution, I’ve listed something called A-I-I-R; that stands for **Airborne Infection Isolation Room**. That is just

another way of saying “a pressure negative room.” Those are the rooms that come with specialized air circulation systems, so that when a door or window is opened, outside air is drawn IN.

Path #16: The next column we have is something called *Full-Barrier Precautions*. These include all the standard/contact/droplet/airborne precautions, and go on to include shoe and head covers as well. This level of precaution basically means that your entire body is covered from head-to-toe.

Path #17: And out here to the far right, we have that new column we’ve added called “*Enhanced Full-Barrier Precautions*.” In light of the developments occurring in West Africa with the Ebola outbreak, we thought it prudent to add this enhanced version of the full-barrier precautions. This includes all the levels of precaution we’ve already covered, as well as the full hood to cover the head, and the rubber boots for more demanding conditions, which can be reused after they are reprocessed (cleaned, sterilized and dried). That non-porous apron has also been added to help reinforce the one-piece Tyvek suits that are fluid resistant and cover the entire body. OK, that’s it for each level of precaution. If things change and we receive new recommendations from the U.S. Centers for Disease Control and Prevention on what constitutes each level of PPE, we will update this online training course’s content as appropriate.

Path #18: I would be remiss if I failed to cover disinfection, while discussing PPE. So in this final component to this online training course, I will briefly cover the basics of what should be used for disinfection. The first example I’ve provided is an oldie-but-goodie: plain old soap and clean water. As simple as this may sound, those hallmarks of hygiene are a great way to help remove the vast majority of microbes. That second bullet-point covers approved disinfectants, which equates to those solutions that the Environmental Protection Agency (aka: the EPA) or the Occupational Safety and Health Administration (OSHA) have identified as effective against the control of microbes and infectious agents. And finally we have that last bullet which speaks about good old fashioned bleach solutions. For those of you who may be unfamiliar with how to create your own bleach solution for use in disinfection; here are some simple directions on how to create the three most recommended strengths of bleach solution: the 10%, the 5% and the 1%.

Path #19: In order to create 10% bleach solution on your own, you can use any off-the-shelf liquid bleach from the supermarket. Depending on how much of a solution you need to create, you can use table spoons, cups, or buckets, as applicable. In this example, I will use cups. Fill a cup nine times with standard tap-water, and dump those into a plastic bucket. Now take the same cup and fill it ONCE with liquid bleach. Drop that into the same bucket and mix your solution. Use tape with a permanent-ink pen to write “10% Bleach” and stick that to your spray bottle, etc.

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Path #20: To create a 5% bleach solution, fill your cup nine and a half times with tap water, and empty the contents into a plastic bucket. Now take the same cup and fill it HALF way, and dump that into the bucket. Mix the bucket's contents and label your spray bottle as "5% Bleach" solution.

Path #21: Finally we have the 1% bleach solution. If you take a cup of your 10% solution, and dump that into a plastic bucket, then add nine cups of tap water; then you will have a 1% liquid bleach solution. Don't forget to mix your solution and to properly label your spray bottle!

Path #22: Well, that covers things for PPE. If you have any questions or concerns on what I've covered thus far, please contact Dan Mackie at 775-443-7919, or at his e-mail address: [dmackie@health.nv.gov](mailto:dmackie@health.nv.gov)

Path #23: Thanks for taking the time to watch and listen to this online training course. We appreciate your willingness to learn about this key component to the foundations of public health!